CAP COM This is Apollo Control, Houston, and everything seems to be proceeding very nicely. Ken Mattingly has been running through entry, pre-entry checklists with Frank Borman. We're content, so are they. At the news conference a little while ago, numbers were passed to the press based on a final maneuver of something on the order of one or two feet per second. As you know, we scrubbed it, there is no need for such a maneuver, and it has been terminated, but the fact that we are not going to have the maneuver matters almost not at all on the numbers. For instance, it changes the splash time by one second, so if you recorded numbers earlier, well, stick with those. And we have recorded the checklist and the conversation with Apollo 8 and we'll play it for you now.

CAP COM Apollo 8, Houston, you call?

CAP COM Apollo 8, Apollo 8. Did you call?

SC Negative, Apollo 8. We did not call you.

CAP COM Okay, thank you.

SC Roger.

CAP COM Apollo 8, Houston.

SC Go ahead, Houston. Apollo 8.

CAP COM Okay, I've got some weather and recovery force status, and a couple of last minute items to run down any time it is convenient for you.

SC All right. It's convenient right now. Any time.

CAP COM Okay. For the mid-Pacific, the general condition is good. You can expect cloud bases 2000 foot, scattered; visibility, 10 miles: wind 070 and 12; wave heights, four feet; altimeter 2974. Sunrise will be 1710 Zulu, and first light 1649 Zulu. The recovery forces, ship will be Yorktown; the aircraft will be Airboss number 1 and 2, and recoveries 1, 2, and 3. The estimated time to a target point: the ship is, Yorktown is, on the target point, Airboss aircraft 15 minutes and will be on scene commander, recoveries 1, 2, and 3 are SH3 Alphas, and they go with the Yorktown, so they are on the target point, all of them have swimmers aboard. If the recovery aircraft do not hear from the spacecraft, they will go ahead and put swimmers in the water, and if you are in good shape and give them a call, then they will hold off on dropping swimmers until sunrise.

SC Roger. Say again, the sunrise and first light time for me, would you please?

CAP COM I say again. Apollo 8, Houston, notice the large middle gimble angle, over.

SC Thank you. Would you say again the daylight time, please, sunlight and first light.

CAP COM Okay. Sunrise is 1710 Zulu and first light is 1649 Zulu.

SC Thank you.

CAP COM Okay. Looking over the weather I gave you was the 2000 foot scattered at the target point, may have a 6000 foot broken layer above that. At the max lift point, you will have about the same thing, and altimeter is the same down the range. As you go further to the east, the weather should improve slightly, there is no problem with thunderstorms or rain showers in any of your recovery area.

SC Very good, thank you.

CAP COM The items that we still need will be a PRD reading as late as you can do it conveniently prior to Apollo stowage. And we don't have any numbers on the last crew sleep period. I'd like to verify that the secondary RCS was activated on all four quads. We're going to have about five comments on the entry checklist procedures to verify.

SC It was activated on all four quads, that's correct. Our final stowage is completed, we'll read out the PRD's for you now.

CAP COM All right, thank you.

SC The LMP's reads .64, I believe it's been that way throughout the flight. The CMP's reads .11 - that's 1.11.

CAP COM Roger.

SC Stand by a minute. Let me look at it closely. That's point 11.

CAP COM Roger. Zero point one one.

SC And the one I ended up with reads 3.10.

CAP COM Okay, thank you.

SC Okay, go ahead, Ken, what else do you want to talk about?

CAP COM Okay, to make everybody happy, we can use an estimate of the number of hours sleep that people got.

SC Just a minute, I'll give you that, I forgot. Anders got about 5 hours, and Jim Lovell got about 5, and I got about 5 and a half or 6.

CAP COM Sounds good. Okay. We went through an exercise with the mockup on the preentry preparations, and we noticed that in the LMP's checklist on page S12, when you go to top off the repress bottles, I believe it is a misprint, it should read the PLSS fill valve rather than the repress valve, and we should be going to the fill position as opposed to going to on.

SC Roger, that's what we do.

CAP COM Okay. And on - go ahead.

SC Go ahead. We agree, that's what we do.

CAP COM Okay. On page E7 of the entry checklist, and under step 34, as long as you have panel 382 open, that's a convenient time to go ahead and have the evaporator water controls, both primary and secondary, to AUTO and the suit heat exchanger for the secondary glycol to FLOW.

SC Those items are already accomplished.

CAP COM Very good. On page E9, when you are getting ready to transfer the RCS to the command module position, could you also avoid having the engines fire as a result of attitude correction, you might want to take the manual attitude switches to accel command ON or minimal impulse, and again on E9 Alpha, it's step 41 Bravo if you want to go back to attitude 0, bring your manual attitude switches back to RATE.

SC What was that last step?

CAP COM Step 41 Bravo on page E9 Alpha. It's if you decide to use either minimal impulse or accel command Step 41 Bravo would be a good place to go back to rate command.

SC Okay, we do a purge or -

CAP COM Okay, fine. Then on -

SC I didn't put all those control configurations Cchanges on the checklist but that's exactly what we did, on minimal impulse.

CAP COM Okay, real fine.

SC Houston, Apollo 8.

CAP COM Go ahead, 8. Apollo 8, Apollo 8, go ahead.

SC I'd like to confirm one item on the pad message, please.

CAP COM Roger.

SC Time to retrodrogues, reference you have to drogues, please.

END OF TAPE

CAPCOM Okay, I'll check that one out.

SC And also, Ken. We are going to turn on our VHF now. About 4 hours before entry.

CAPCOM Real fine. Thank you. I'll let you know when we pick it up.

SC ... (garbled)

CAPCOM Afirm.

PAO This is Apollo Control Houston. 142 hours 3 minutes into the mission. A word or two on some of the congratulatory message traffic that we have experienced during this mission. I would call it unusually high. Probably associated with the general interest in the mission. The fact that it is the holiday season and more people have more time to express themselves. In general, far and away, the comments have been extremely lauditory, praiseworthy, and of course, there has been - as there always is, a very small but an extremely vocal minority who thinks we shouldn't have done the mission or if we should have, we shouldn't have done it over religious holidays. Still others have criticized any religious overtones that have crept into the mission. But perhaps, typical of the happier kinds of messages is one that was received here just a few hours ago simply from an anonymous well-wisher in Hornsby, New South Wales, Australia. It reads, "Happy landing Apollo 8 astronauts." At 142 hours 4 minutes into the flight, this is Apollo Control Houston.

END OF TAPE

PAO This is Apollo Control Houston at 142 hours 34 minutes. In the last few minutes, we've recorded this conversation.

CAPCOM Apollo 8, Houston.

SC Go ahead, Houston.

CAPCOM Okay. We have checked into your drougue time and the number of 0816 on your entry PAD is correct. We'll be giving you an updated entry PAD on the scheduled time of 14330. At the same time, we'll be giving you an update of your state vectors for the LM and CSM. The midcourse number 7 was less than seven-tenths foot per second and we will not execute it. You have a P52 scheduled at 14330 which is not required. It's your option. However, if you decide to delete the P52, the CMC cell check in this DSKY condition light test are still requirements. Over.

SC Give us the CMC cell check. What about DSKY check?

CAPCOM Apollo 8, Houston. That's my mistake on CMC cell check in DSKY condition light. That's an optional test. Over.

SC That's what we thought, Ken. Gosh, if it's been working perfectly for 6 days, I don't see any reason to test it.

CAPCOM I agree.

SC Morning, Ken. How's Houston this morning?

CAPCOM Just fine. Nice and balmy.

SC Good.

PAO And that was Jim Lovell you heard chime in at the end. He's up and sounding perky this morning. At 142 hours 37 minutes, that's our status.

END OF TAPE

PAO This is Apollo Control Houston here 142 hours 59 minutes into the flight. And the velocity increase we are seeing is now becoming dramatic. We are up to 11 298 feet per second and it is really building. We are 30 424 miles from home. Here is the conversation with the crew.

SC Houston, Apollo 8. Over.

CAPCOM Go ahead, Apollo 8.

CAPCOM Apollo 8, go ahead.

SC I am just - it is my understanding that you are bring up the secondary loop in 1 hour prior to SEP maneuver.

CAPCOM That is affirmative. About E Echo 9.

SC Okay.

CAPCOM And Bill, ... guesses if we have the water boiler going on the primary loop, that you - you might wait about 5 minutes or so before you initiate the secondary loop.

SC Wait 5 minutes from what? From the time the primary loop starts or from 1 hour?

CAPCOM From the time the primary loop starts. This will give you chance to see if it had a chance to dry out or not.

SC Oh, I am with you. Okay.

CAPCOM And for your own information, we already have a VHF downlink. Is poor quality, but we do have contact.

SC Okay, we haven't turned anything over to VHF yet.

CAPCOM Okay.

SC We tried to call you on the VHF though Ken.

CAPCOM Roger. Say the quality is pretty poor. They may not be able to understand you.

SC Roger. Houston. Apollo 8. Over.

CAPCOM Go ahead, Apollo 8. Apollo 8, Houston. Go ahead.

SC Ken, we got two things going here which make this suit heat exchanger pull a little different. One of them is, we are not doing a cold soak and the other one is we are powering down the secondary loop prior to SEP. And I wonder if it is a good idea to have the suit heat exchanger only on secondary loop like this. And plus the fact that we haven't got any cabin heat exchanger.

CAPCOM I don't think that was the intent though. What they had in mind, we have the suit heat exchanger on both loops and if they got too cold, you could use the panel switching to shut down the primary loop through the heat

CAPCOM exchanger, but in any event you would always have something going through the suit heat exchanger, I recognize that we are going to be shutting down the secondary heat exchanger pre-SEP and then turning it back on prior to entry, but the idea was to have both primary and secondary loops on the suit heat exchanger simultaneously.

SC Yes, my checklist doesn't reflect that. I think that's a good idea, because we are a little suspect of our cabin fans and don't plan to use them.

CAPCOM Roger.

SC Houston, Apollo 8. Over.

CAPCOM Go ahead, 8. Apollo 8, Apollo 8. Go ahead.

SC Roger, what's our adjustment of our post-separation main bus voltage?

PAO This is Apollo Control Houston. That brings us up todate. And to amplify one remark I think you heard Bill Anders say, he would try to call on VHF and - if it was received, it was badly garbled. If I recall correctly, on the way out and they were quite a way from the earth, we - they heard us broadcasting on VHF out to about 22 000 miles. Just about the reverse situation here, where it is slightly more than 29 000 miles out. At 143 hours 4 minutes into the flight, this is Apollo Control Houston.

END OF TAPE

Splash Down

What happens to SM 419/1
all S's looked in Pacific 421/1
route over Peking, Tokyo "
schedule of reentry 421/2

PAO Apollo Control Houston at 143 hours 36 minutes into the flight. And we have been chatting more with Bill Anders primarily on how things look. The spacecraft is now 26 458 miles from earth, moving in a velocity of 12 075 feet per second. The weight of the spacecraft is 31 600 pounds. Now that weight will change dramatically 15 minutes before we reach the 400 000 foot mark when the service module leaves us and it will go from 31 600 down to about 12 000 pounds and will hold close to that on in. Here is the conversation.

CAPCOM Apollo 8, Houston. We will be making a handover from Carnarvon to Honeysuckle at 15.

SC Roger. Houston, Apollo 8. Over.

CAPCOM Apollo 8, go ahead.

SC I am still a little bit confused on that - on this activating the secondary loop. You indicated inactivating it at one hour or five minutes after the primary evaporator comes on the line. My judgement shows that the primary evaporator probably won't come on the line until we by-pass the radiators. Have you got something else in mind I don't know about?

CAPCOM Okay, Bill. We passed up an update some time back on page E-9 step 38 right at the beginning. And you have got a final GET drift check. And between there and the step 39 where it says terminate CM RCS pre-heat, that was the place we wanted to activate the primary loop by putting the primary glycol/water switch to AUTO and the glycol evaporator steam pressure to AUTO.

SC Roger. I don't expect it to boil, though. Do you?

CAPCOM Okay, Bill. We are hoping that it will there. It looks like we will have had a stable attitude for sometime and we anticipate that it will be warm enough to make it boil. That is the reason ... if it is boiling, that you wait. If it isn't go ahead and turn on the secondary loop.

SC Okay, well that's where I was confused. I am waking up. Thank you.

CAPCOM Yes sir. Apollo 8, Houston.

SC Go ahead, Houston.

CAPCOM Okay, Apollo 8. We would like to update your LM state vector, CSM state vector, and target point and if it is convenient now, why we will go ahead and do that if you will go to PU and ACCEPT.

SC Roger. PU and ACCEPT.

CAPCOM Apollo 8, Houston.

SC Go ahead, Houston. Apollo 8.

CAPCOM Okay, the loads are in and verified and the computer is yours. You can take it back to block and for Bill's information, weight has skipped from the main bus postset voltage to 27.5.

SC Guess. You mean the EECOM's are guessing. At least they are honest for a change.

CAPCOM That is more than you can say for the computers.

SC Or the crew.

CAPCOM Apollo 8, Houston. Apollo 8, Houston.

SC Go ahead, Houston. Apollo 8.

CAPCOM Okay, 8. We have an entry PAD for you.

SC Good, just a minute. Ready to copy, Houston.

CAPCOM Okay, this will be the mid-Pacific. 357 152 359 146 29 00 268 plus 0813 minus 16503 065 36 221 645 121 22 36301 146 46 14 00 28. The next block is November Alpha. D sub zero 400 02 12 0025 0334 08 14 16 0590 312 Zedia persi up 165 right 34 up. Use non exist E&S pattern. GDC align, primary star Sirius, secondary Rigel, roll 308, pitch 209, yaw 357. This entry will not involve P65. Over.

SC Houston. Apollo 8. Entry PAD as follows: mid-Pacific 357 152 359 146 2900 268 plus 0813 minus 16503 065 36221 645 12122 36301 1464614 0028. Next block not applicable 400 0212 0025 0334 0814 1659 312. Zedia persi up 165 right 35 up. Use non exit G&S pattern. Backup alignment Sirius Rigel roll 308, pitch 209, yaw 357, and we won't need P65.

CAPCOM Okay, Apollo 8. Would like to verify sextant star shaft 0590. And the boresight star - the last one is right 34. Over.

SC Roger. Boresight star is right 34. And I have the sextant shaft. That's 0590.

CAPCOM That's correct, Apollo 8.

PAO Apollo Control here, and that brings us up to the point where we are now. For those newsmen watching the projection on monitors in our MSC Auditorium news area you'll be able to see very shortly the spacecraft do a long loop the loop kind of maneuver against a flat map such as we are viewing. The maneuver will be quite similiar to that that we saw the other day after the TLI burn when we did a big loop before we started tracing a steady flight path away from the earth. Of course, we are going to see this morning the mirror image of that maneuver, only in this case it will be performed almost directly over India. The spacecraft is now looking down on the southern tip of India

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET 1433600, CST 6:27A 412/3

PAO It is directly over Ceylon, and it will for earth mapping purposes seem to proceed in a northwesterly direction.

END OF TAPE

CAP COM And it will, for earth-mapping purposes, seem to proceed in a northwesterly direction as it prepares to make its entry, lines up for its entry PAD back to earth and the Pacific Ocean. We are 25,309 miles away from the spacecraft and it is moving at 12,328 feet per second. At 143 hours 47 minutes, this is Apollo Control, Houston.

END OF TAPE

PAO This is Apollo Control Houston, at 144 hours 8 minutes into the flight. And things are continuing to rock along. In the last few minutes, we had a little surprise here with a not yet completely explained water dump. We chatted with the crew about it and, apparently, Bill Anders had dumped some waste matter, some urine overboard earlier, which he had collected for awhile. We still don't completely understand it. We're talking a little about this and here's how the conversation how goes.

CAPCOM Apollo 8, Houston. Apollo 8, Apollo 8, Houston.

SC Go ahead, Houston.

CAPCOM Okay, Apollo 8, can you tell us if you've done anything with your potable water. We've noticed our readout has gone from 100 percent down to 56 in the last couple of minutes.

SC We're reading about 50 percent right now.

CAPCOM Roger. That correlates with what we see. Have you done anything to change configuration? Over.

SC Yeah, we noticed the venting here, too, Houston.

CAPCOM Jim, did you mean you could visually see it?

SC Level Yeah, we're - oh, stand by - Bill just dumped urine so that might have been urine we were seeing. Bill just shut the potable inlet, Ken.

CAPCOM Okay, thank you.

SC Houston, Apollo 8.

CAPCOM Go ahead, 8. Apollo 8, Apollo 8, go ahead.

SC Roger, Houston. We're still showing about 52 percent and we had our switch on waste so we don't know whether it dropped from a higher value or not. Is yours stabilized now?

CAPCOM That's affirmative. Ours has stabilized now. It was reading full just a few minutes ago.

SC Roger. I don't think - we can't account for any sudden drop in water.

CAPCOM Okay, we looked in the malfunction procedures and number 28 doesn't reveal anything very suddenly.

SC Bill is looking there now.

SC Houston, Apollo 8, over.

CAPCOM Go ahead, 8.

SC Okay, I'm looking at malfunction 28 and it takes you to box 6 but I don't really think that's the problem because the waste tank quantity hasn't changed any. Over.

CAPCOM Okay, I concur. We're watching the same thing.

SC But we don't care about the potable tank but we do about the waste tank so just in case there is a problem somewhere, I'm going to shut the potable tank OFF and leave the waste tank inlet valve OPEN. How does that sound to you?

CAPCOM Stand by. Okay, 8, we concur.

SC If i see any water floating around, I'll give you another call.

CAPCOM All right. Thank you.

PAO So much for our water situation. That's apparently been laid to rest now. As Anders said, it's not really a problem. Just not immediately explainable so he turned off the potable tank. There are two tanks here, the potable tank, the drinking water, and the waste water tank. He had vented the waste water tank to some degree but apparently had not - they saw some kind of action on the potable meters. In any case, it's been adjusted. Our present distance is 22 276 nautical miles from Earth. This puts the spacecraft at the synchronous orbital altitude and it will now begin to sink its direction in relation to our lunar map. In other words, it will start flying in the direction of the turn of the Earth. Or, at least, it will appear to us down here on Earth to do that. The spacecraft, in fact, is a fixed point in inertial space, just as the Earth is. For mapping purposes, it will appear to turn from approximately this point forward. Our velocity is 13 102 feet per second. At 144 hours 13 minutes, this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY 12/27/68 GET 144:38:00 CST 7:29 am 415/1

CAP COM Apollo Control, Houston, at 144 hours 38 minutes into the flight. Apollo 8 is 19,000 miles from the earth, it's moving at 14,029 feet per second. Present combined weight of the command module and service module is 31,600 ~~miles~~. We have some conversation, we have had some conversation, let's hear it now.

CAP COM Apollo 8, Houston.

SC Houston, Apollo 8. Did you call?

CAP COM Apollo 8, Houston. You are loud and clear. We've taken a look at this water -

SC Apollo 8.

CAP COM Apollo 8, Appollo 8, Houston. Read you loud and clear. We have taken a look at your potable water quantity problem and it appears to be a transistor problem. Suggest that you leave the potable tank isolated. You have sufficient water in the waste tank to continue to entry. Over.

SC Roger. Thank you, Houston. Is that go for entry?

SC Houston, Apollo 8.

CAP COM Apollo 8, Apollo 8, go ahead.

SC Roger. Is our thermal stability good enough we can leave the PPC attitude and go to gimbal angles now? Houston, how do you read, Apollo 8.

CAP COM Read you loud and clear, Apollo 8, and we're checking on the PPC problem now. Apollo 8, Houston, you are cleared with entry attitude at this time.

SC Okay, fine, thank you.

CAP COM Apollo Control, Houston, that brings us up to date. We look good all across the board. People at the Control Center are beginning to fill up now with official observers, officials of the program. The 70-seat viewing room immediately behind this Control Center is about half filled right now, and within the next hour, I imagine we will see it filled to overflowing, which it has been during every critical event of this mission. At 144 hours, 41 minutes, this is Apollo Control, Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET14505, 756a, 416/1

PAO Apollo control, Houston, here 145 hours 05 minutes into the flight. Some brief conversation with the crew since we last talked, here it is.

SC Houston, Apollo 8, over.

CAPCOM Apollo 8, loud and clear, GO. Apollo 8, Apollo 8, go ahead.

SC Roger, we have completed the check list down to the one auto point and we will stand by for one hour.

CAPCOM Roger. Apollo 8, Apollo 8, Houston.

SC Go ahead, Houston. Just for information did you folks end up having to use any command module RCS heaters.

SC Negative, all our indicators are pegged either high or high volt.

CAPCOM Okay, thank you.

HOU Carnarvon, network GOSS conference voice check, how do you read.

CRO Network, Carnarvon, read you weak, but clear.

HOU Roger, Carnarvon, I read you loud and clear.

CRO You are loud and clear now.

CAPCOM Apollo 8, Houston, standing by for hand over to Carnarvon.

SC Roger.

CAPCOM Apollo 8, Houston.

SC Go ahead, go ahead, Houston.

CAPCOM Okay, Apollo 8, if you will go to PU and accept, we would like to update your LEM and CSM state vectors, over.

SC Roger.

CAPCOM Apollo 8, Houston. State vector load is complete, verify the computer is yours. Apollo 8, Apollo 8, Houston. State vector load is complete, the computer is yours.

SC Roger, Houston, we are going to block.

CAPCOM Roger.

PAO Apollo control, Houston, here and the spacecraft is now a mere 15 256 miles from the face of the Earth, its velocity is almost a match in feet per second 15 459 feet per second. Its weight 31 600 pounds. The ~~service module of approximately~~ 20 000 pounds will be jettisoned abruptly at 15 minutes before we reach the 80 mile high, the 400 K the ~~400 000 foot mark. At - one other mention,~~ the viewing room as we said earlier is beginning to fill with vistors and among is Dr. Kurt ~~Devis~~, director of the Kennedy Space Center and his number one deputy for launch operations, Rocco Petrone, the gentleman who had so much to do with the departure of Apollo 8 from the - six - more than

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET14505, 756a, 416/2

PAO six days ago, they are here to watch it come back to Earth this morning. At 125 hours 09 minutes into the flight, this is Apollo control, Houston.

END OF TAPE

CAPCOM Apollo 8, Houston.

SC Go ahead, Houston.

CAPCOM Okay, two fast items. Number one, it has been suggested that since Marezine takes some time to take effect, you might consider whether you would be interested in taking some now. And I have an entry pad which has some very small updates to go on it if you would like to copy that.

SC Okay, stand by. Let me get out the entry pad.

SC Okay, go ahead with the entry pad, Houston.

CAPCOM Okay. We are still going to the mid-Pacific, 357 152 359 146 2913 267 + 08 13 - 16503 066 36221 647 12166 36301 1464613 0028. The next block in November Alpha, z sub 0400 0210 0025 0335 0816 160590 312, zeta persei, up 165, right 34, up nonexit MES pattern, Sirius and Rigel, roll 308, pitch 209, yaw 357, no P-65 involved, over.

SC Roger, Houston. Rentry pad as follows: mid-Pacific, 35715235914629132 67 + 0813 - 16503 06636221647 12166 36301 14646130028, NA, 400 02100025033508161605903 12 zeta persei, up 165, right 34, up use nonexit MES pattern, Sirius, Rigel, 308, 209, 357, no P-65.

CAPCOM That is correct, Apollo 8.

CAPCOM Apollo 8, Houston. You are clear to initiate cabin cold soak at your discretion, over.

SC Roger.

END OF TAPE

PAO Apollo Control Houston here at 145 hours 32 minutes into the flight, and the trajectory of Apollo 8 is programmed against the - our flat wall map here - is carrying it on a path up the west coast of India. It will proceed northerly - northeasterly in a very few moments, and curve, and start in an easterly direction carrying it across China, perhaps before then it will see a little of the southern extremities of the Soviet Union, the Himalayas China and then down across Guam. Present velocity is 17 272 feet per second, the spacecraft is only 11 626 miles from the face of the earth. A few minutes ago Frank Borman called us and suggested he might entertain doing the pyro arm check a little early. It was considered here, we quite agree with him and we're all set to go on it. Here's how the conversation went.

CAPCOM Go ahead 8.

SC Okay, it doesn't appear that we are going to be able to trigger the primary evaps, so I'm going to start up the secondary loop.

CAPCOM Okay, Apollo 8, we concur.

SC Houston, Apollo 8.

CAPCOM Go ahead 8.

CAPCOM Apollo 8, Apollo 8, go ahead.

SC Roger. Since we're going as smooth as we are here and we've got good comm let's start this pyro circuit check about 10 minutes early. What do you say?

CAPCOM Apollo 8, Apollo 8, we can conduct the pyro check just any time.

SC All right, why don't we do it here just momentarily then?

CAPCOM Roger.

SC WE'll give you a call when we're ready.

CAPCOM Roger.

SC Houston, we are ready to proceed with the pyro circuit check.

CAPCOM Roger, go ahead.

SC MSFN are you monitoring the sequential test now? Houston Apollo 8.

CAPCOM Apollo 8, Apollo 8, that's affirmative.

SC Hello Houston, Apollo 8.

CAPCOM Apollo 8, Apollo 8, loud and clear. Affirmative we are monitoring.

SC Okay.

SC Standing by for GO for pyro arm.

CAPCOM Apollo 8, Apollo 8, you have a GO.

SC Roger.

END OF TAPE

PAO Apollo Control Houston, here at 145 hours, 45 minutes into the flight. All is continuing to operate quite satisfactorily. We tried a VHF check with the spacecraft a few minutes ago, and it didn't work out so well. Neither Carnarvon nor Guam picked up on VHF, that from about 10 000 miles out. We are now 96 000 miles from Earth. The velocity is up to 18 532 feet per second. We have a little conversation backed up on us, let's hear it now.

SC Houston, this is Apollo 8. How is your tracking looking?

CAPCOM Looking great.

SC Okay, everything went fine with the check. We are all armed and ready to go here.

CAPCOM Okay, if you have done everything else, let's make a VHF check.

SC Okay, I'll turn off my S-band. The other two will be on S-band.

CAPCOM Okay, Harry will give you a count in just a second. Apollo 8, Houston. Simultaneous VHF and S-band, over.

SC Roger, I'm not reading you on VHF.

CAPCOM Roger, stand by one.

CAPCOM Apollo 8, Houston. Simultaneous VHF and S-band. Do you verify that you are on the left-hand VHF antenna, over.

SC We can verify the antenna, but we can't verify reading you on S-band or VHF.

CAPCOM Okay, we are receiving some down link, although it is considered to be poor quality.

PAO Apollo Control here. Some may be wondering what happens to the service module. Well, it is jettisoned as 15 minutes before we reach our entry enterface or entry point. There is a precept burn of 90 feet per second cranked into the service module and it departs from the command module at that rate. The burn continues for some period of time, exactly which period, I don't have in front of me; but at any case, the new trajectory of the service module carries it about 100 miles or more south of the track of the command module. It is not known exactly what will happen to the service module, some people think it will come on down to an altitude of perhaps 300 000 or 400 000 feet, hit the thicker atmosphere and then bounce out into a sun circleing orbit. Others think it will be captured and will certainly burn up before any of its pieces reach the Pacific Ocean. We just can't predict at this point. We are certain it will be safely out of the way of Apollo 8. At 145 hours, 48 minutes, this is Apollo Control Houston.

END OF TAPE

PAO This is Apollo Control Houston, at 146 hours, 12 minutes into the flight. I think all of the consoles here have been reconfigured for this reentry effort now. Probably the most noticeable item, leaving the consoles are the lunar maps. They are being replaced by maps, which rested right under the lunar maps, which were simply projections of good ole Earth. A few minutes ago, the crew checked some of the events that will take place in the reentry process and here is what we passed them.

CAPCOM Apollo 8, Houston. I would like to try the right VHF antenna if you have time.

SC We're on right.

CAPCOM Okay, this is a simultaneous VHF and S-band transmission, 1, 2, 3, 4, 5. How do you read on VHF, over?

SC Read you loud and clear.

CAPCOM Understand that is on VHF, is that affirm?

SC Houston, this is Apollo 8. I answered your call on VHF. Did you receive?

CAPCOM Okay, it is not piped back here (garble). I'll have to check and see if they have another ground station.

SC You were loud and clear, Jim.

CAPCOM Roger, thank you.

CAPCOM Okay, Apollo 8, we receive you loud and clear on VHF, through Carnarvon.

SC Roger.

CAPCOM Apollo 8, Houston, standby for handover from Carnarvon to Guam, on the hour. We should have continuous contact, except for the black-out period beginning at 14651.

SC Roger.

PAO Apollo Control here. Now the velocity acceleration pickup is quite dramatic. Our display here intergrates a new value every 12 seconds, I believe. Let me give you a sample of how it is building, 23 303 feet per second, now; altitude 4950 miles. Still reading 23 353, 23 403. It has been stepping up here in these last few minutes in increments of 50 to 60 feet per second. For reference purposes, the peak velocity previously reached prior to this mission by a manned vehicle was the Gemini 11 spacecraft, at perigee after its high altitude burn, which was the other two caltitude record as well, 740 odd miles. That velocity was 26 352 feet per second. Today, we should, at the point of entry enterphase or the 80 mile mark, as we come back into the Earth, we should see a velocity on the order of 36 220 feet per second. Converted to miles per hour, that is 24 530 miles per hour. And at 146 hours, 16 minutes, that is our status and this is Apollo Control Houston.

END OF TAPE

PAO Apollo Control Houston here, 146 hours 26 minutes. We have had no additional conversation since our last report from the crew, apparently they are all settled down in their couches waiting for the reentry. The next major event will be the command service module separation which should occur about 5 minutes from now. The Capsule Communicator has just been advised to tell the crew that we are GO for that event. This, by the way, will be the fourth, this is the fourth manned flight to be returned to the Pacific area. And coindicentally, all of the 8 series, Mercury 8, Gemini 8, and now Apollo 8 were brought back to the Pacific area. In addition, Mercury 9 landed off Hawaii. Here is some conversation, Ken Mattingly, our CAPCOM is talking to Bill Anders.

SC Houston, Apollo 8. Confirm GO for pyro arm.

CAPCOM Apollo 8, Apollo 8, you are go for pyro arm.

CAPCOM Apollo 8, Apollo 8, you are GO for pyro arm. Everything is looking good.

SC Roger. Everything is looking good here, Ken.

PAO Recovery is advising the Flight Director of their good status and has good weather out there. They are on station. The route of flight, in case you are not looking at a map, will be over northeast China, Peking, and over Tokyo, then we start a southeasterly slant, the ship Redstone is parked at 24 degrees north 169 degrees east. The next listening point will be the ship Huntsville, tracking the ship 172 west 12 degrees north, and the landing point just a few hundred miles southeast of there at 165 west approximately 8 north. That point, by the way, is 600 miles northwest of Christmas Island, which I'm sure has been noted.

SC - going to try to reservice, over.

PAO The crew has been advised that their primary evaporator has dried out, a fact that they couldn't care less about. They are about to say goodbye to that entire system and the service module in another 2 minutes.

PAO And the spacecraft is now, we see our systems here show that they have gone to ring 2. The reaction control system, the system looks quite good, it's operational at 200 pounds of propellant available in that system. It is a redundant system. A few of the events, as we plan to clock them here, the 400,000 foot point which is that point when many of our events begin to happen, we call

it the area of reaching some little small amount of atmosphere is to occur at 146 hours 46 minutes. That blackout period should begin about 25 seconds later. The maximum heating point would be 146 hours 47 minutes, and which occur at roughly 200,000 feet. And at this point, the roller coaster type ride that the spacecraft will take will bend slightly upward for approximately 40,000, 50,000 feet and then level off and begin its last plunge back. But as it hits the first breaking point at 180,000 feet, the max g force will be felt by the crew, of 6.8 g's. A second g spike of 4.2 will be noted about 4 or 5 minutes later. The total blackout we are predicting this morning is on the order of 3 minutes. Since we have very little experience reentering at these velocities, we must caution you that those are only estimates.

CAPCOM Apollo 8, Apollo 8, your secondary loop looks good.

SC Roger, Ken.

PAO The Flight Director has confirmed the separation, separation of the command module and the service module. We have been looking at data on the command module alone and all the values look quite good. This is Apollo Control Houston.

PAO Apollo Control Houston here. We continue to look good on all sources. We - in 11 minutes from now, we will be at the 400,000 foot mark and the velocity of the crew at this point will be 36,220 feet per second, we estimate. That converts to 24,530 miles per hour, which is nearly, is more than 500 miles per hour faster than the crew was moving only 2-1/2 days ago at translunar injection. Their burnout speed at that point 180 miles above the earth was 35,556 feet per second or 24,080 miles per hour. Today as we come back to than point after all the maneuvering and all of the burning at 180 miles above the earth, we will see a velocity of 35,644 feet per second and still building up down to this value at 400,000 feet.

END OF TAPE

PAO 400 000 feet. These are estimates and will be refined based on post-flight data, but they are good estimates at this point. All in all a very quiet reentry up to this point. This is Apollo Control Houston. We will continue to monitor.

CAPCOM Apollo 8 Houston. Looking good both primary and secondary loops look good.

CAPCOM Apollo 8 through the Redstone. You're looking good, both primary and secondary loops are holding good.

CAPCOM Apollo 8, Apollo 8, through Redstone, over.

PAO This is Apollo Control here. We have put in a call through the Redstone.

Sc Roger.

PAO And they were advised by Ken Mattingly that they were looking good. They certainly are. The cabin pressure is 4.9 pounds per square inch, the cabin temperature is down a little bit, purposely, so it's down to 61. Most of the flight it ran between 77 and 78 degrees. We're estimating that the crew is still head down and tracking the horizon visually out their rendezvou - out the windows, any handy window, and letting the G&N system do its work. At 146 hours 41 minutes this is Apollo Control Houston.

END OF TAPE

PAO the com control will be handed over from the Redstone to the Huntsville and we have lost signal, our network controller says we lost signal at 146 46 minutes and with very nearly 46 seconds. And our estimate is that this black out period will continue - oh, let's see, three minutes and right about now the crew should be getting the spike, the G spike that they will see just under 7 G's. We would estimate they are down to the 180 000 foot point, flattening out and actually beginning to ascend slightly. They should be - their heat rate will dramatically recede but they will still maintain a large heat load, nearly 5000 degrees out on the leading edge of the heat shield. Flight director notes that he hears a keying coming, as in Morse code keying and he is wondering as to the source of it. 146 hours 48 minutes. And our curves put the spacecraft down about 35 to 36 miles above the Earth and elevating it slightly perhaps up to 40. Ken Madingly just put in a call and just frankly labeled it a radio check. He has gotten no response as get. And Ken tries a second call through the Huntsville. Our estimates say that the crew, along about now should be emerging, the Huntsville advises they have not established contact with the spacecraft at this time. About three and a half minutes since we went into the blacked out area. And now the Huntsville is handing over communication checks - communications authority to one of the range aircraft, they called in AIRA. And the Huntsville - the Huntsville says they have acquired an S-band signal, at 51 minutes 04 seconds and they immediately called back and said no contact they negate that first announcement. One of the recovery helicopters reported seeing something, but those kind of reports at these critical moments are not unusual. Ken Madingly puts in another call and there is Jim Lovell. He says, "we are looking good", I can't tell whether it's Borman or Lovell, let's try to cut it in.

SC We are in real good shape, Houston.

CAPCOM Real fine.

PAO Now one of the range ships is reporting a radar contact. The first communication was extremely broken up, but the two words that did come through were "looking good". Another one of the flight controllers here in the cortrol center heard the crew mention, something like "a real fire ball". We estimate here we are about 1 minute to drogue deploy. Drogue shoots out at 23000 feet, and the time plot says 146 hours 54 minutes. The Yorktown is reporting and confirming a radar contact, the baring is being passed to the recovery room, here in Houston.

CAPCOM Your DSKY readings before drogue.

SC Roger, DSKY reading, 1457 812 516522.

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET1464610, 937a, 423/2

PAO That's Jim Lovell. Apollo control, Houston, here at 146 hours 55 minutes, according to our numbers we should have main chute deploy, we should have had it within the last minute. We have heard nothing but a lot of noise on the circuit for the last minute or so. It is understandable at these low level relays, everyone is passing it. And here comes something from Apollo 8, "over," he said. No answer to the Apollo 8 transmission, the transmisssion from Apollo 8, no follow up. In a simulation yesterday we had extremely good communication from the recovery area and we see - we are hopeful that that situation will be duplicated today.

END OF TAPE

PAO 146 hours, 57 minutes, and according to our estimates, they should be hitting the water just about 147 even. If and when we get some intelligible comm, we will come back up on the line. This is Apollo Control Houston, standing by.

PAO This is Apollo Control Houston, 146 hours, 58 minutes. Recovery II within the last minute, has reported they have a flashing light in site, and they followed that with, we have voice contact with the crew. I repeat, they said, we have voice contact with the crew. At 146 hours, 58 minutes. We are going to try and patch that conversation into our consoles here, right now, we have not heard it. The lookout on the YORKTOWN reports a visual siting. They must be close at hand. The helicopter nearest them is piloted by Lt. Kenneth Owen of Pensacola, Florida. There are three swimmers in that helicopter. And our Flight Director has advised us to bring up a special circuit, which I hope will bring up any communication that develops out there. We've an estimate now, that the splashpoint may be as close as 5000 yards from the YORKTOWN. I repeat, 5000 yards from the YORKTOWN. That is a very rough estimate. Now, we have got a second estimate of 5000 yards from the YORKTOWN.

PAO This is Apollo Control. If you have been listening to that circuit, you can tell why we can't be too sure of these events. It's a little ragged, but I have talked to the Public Affairs Officer on the carrier, and he assures me the spacecraft is 5000 yards away. The general plan was to wait for a little more daylight, before attempting a pickup. Intermittently we have been able to pick Bormans voice out of the noise and he seems to be carrying on the routine kinds of conversation that pilots use when they talk to each other in these kinds of situations. We have no word yet upon the attitude of the spacecraft, whether it is nose down, as was the case in Apollo 7, or up. Nearly everyone agrees it is only 5000 yards away from the YORKTOWN, which we will settle for right now at 147 hours, 5 minutes.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET 1470630, CST 9:58A 425/1

PAO Apollo Control Houston here 147 hours 8 minutes, we have had several things confirmed or reverified in the last few minutes. The crew condition number 1 is okay, and that came through loud and clear just as I was talking, crew condition okay. We have thought we monitored several conversations between the crew and helicopters, airplanes, and what not. We do have it back now, crew condition okay. The estimate from the Yorktown is the swimmers will wait approximately 20 to 25 minutes before deploying, this as per planned that as long as the crew is in satisfactory condition and in fact now we know they are floating quite nicely in a stable 1 condition. I'm sure the chatting will continue over the next 20 to 25 minutes, but we are assured that everything is alright out there. This is Apollo Control Houston.

PAO Apollo Control Houston here at 147 hours 13 minutes. We have been advised by the recovery forces that recovery helicopter 3 is hovering over the spacecraft, 50 feet above it, and they estimate they are 6000 yards away from the Yorktown. The helicopter pilot is Commander Donald S. Jones of Madison, Wisconsin. When the swimmers get the signal to deploy, the first man in the water will be a Sonar Technician from Columbia, South Carolina, named Chester Coogin. Two other swimmers will follow him: LTJG Richard Flanagan of Oklahoma City, and Donald L. Schwab of Imperial Beach, California. And at 147 hours 14 minutes that's all the new information we have.

END OF TAPE

PAO Apollo Control Houston here. Two new reports. The inflation bags around the spacecraft are in inflated and there have been reports, visual reports of course, of the flashing light seen from the Yorktown. Now illuminating area is a helicopter with a big floodlight. So the entire area should be visible from the Yorktown. This is Apollo Control Houston.

END OF TAPE

PAO This is Apollo Control Houston. From the YORKTOWN, we have learned they are proceeding toward the spacecraft. They are now 4500 yards away. And that is our situation at 147 hours, 21 minutes.

END OF TAPE

PAO And this is Apollo Control Houston at 147 hours 25 minutes. Apparently Frank Borman is making small talk with the crew of that helicopter out there. It was just relayed to us that he had, in chatting with the pilot, he had asked him if anyone had seen the spacecraft on main chute. And of course, there were several reports and this has become the subject of a continuing chat, the pilot of that helicopter is Commander Donald S. Jones. That is all the new information we have right now. At 147 hours 26 minutes, this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET 1472600, CST 10:20A 429/1

PAO Apollo Control Houston here, and Ken Madinally, our Capsule Communicator here has just tried to call through ARIA aircraft. While we try to establish the communication on that shot, we have been advised that the ship is now 3800 yards away, and it is off the port side of the ship. The YORKTOWN has also advised us that in about in 14 minutes, they expect to deploy their first swimmers, about 14 minutes from now. This is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET14730, 1023a, 430/1

PAO And this is Apollo control, Houston, Ken Madinglys call just worked and we were kind of frightened at the volume and at the level the answer came back. Borman responded enthusiastically, "Hello, there, Houston, how are you doing?" Here is the tape.

HTV Primary rotoer, over. - This is primary rotoer, Apollo 8 has been advised to expect a call on 2968 AIRA aircraft, over. - Apollo 8 (garble). (garble) that is affirmative, over. Have you heard Apollo 8 (garble) over.

PAO This is Apollo control, Houston, that begins to make you understand the size of our communication program, it isn't a matter of just understanding every other word, it's a case of trying to understand a piece of every other conversation, but we are cheered up and we feel good, we know the crew is feeling fine and with in a very few minutes swimmers will be in the water and we should start the movement of the crew into the helicopters and over onto the Yorktown. This is Apollo control, Houston.

PAO And this is Apollo control, Houston, 147 hours 34 minutes, if anybody had any doubts about the condition of the crew, this little conversation which has been relayed to us, should clear up those doubts. In conversation with the helicopter commander, the crew commander of the helicopter asked the crew what the Moon was made out of, where upon ~~Borman~~ Anders responded that it's not made out of green cheese at all, it's made out of American cheese and well, I think the crew is in pretty good shape. This is Apollo control, Houston.

PAO This is Apollo control, Houston. The report to us from the scene is that the first light of dawn is beginning to show in the east, they are seeing streaks of light, the capsule is riding very nicely in relatively calm waters and just any minute from now we expect to hear a report, the swimmers are in the water. The conversations that have come back to us, except for an intermittent, occasionally hearing from the crew directly have been relayed from the water to aircraft at approximately 25 or 30 thousand feet. There it is being repeated to another man in Honolulu at Hickam Airforce Base and at that point it is being relayed again, back here to Houston, at which point I am trying to relay the content of them to you. And now we get an estimate that the swimmers will be in the water in five minutes. He is preparing to put swimmers in the water in four to five minutes. This is Apollo control, Houston.

END OF TAPE

PAO This is Apollo Control Houston. We have a report from one of the onscene helicopters that the spacecraft is still riding very nicely in the water and rotating at about 1 revolution per minute. I say again, spacecraft rotating at about 1 revolution per minute, which would be a little unusual. I don't know that we have ever seen that. This is Apollo Control Houston.

PAO This is Apollo Control Houston 147 hours 42 minutes since we lifted off. From the communications out there, which are perhaps understandably bad at this time of day, this time of year, and under the circumstances we have plucked a breakfast order and we managed to record it and we would like to play it for you.

YORKTOWN This is the Yorktown and what would you prefer for your menu this morning, sir? Over.

SC Biscuit, steak, and eggs.

YORKTOWN Roger out.

PAO In case you missed it the order came back we'll have steak and eggs, the same as we had before we left. Now the helicopter is maneuvering in a position to drop swimmers and we expect that drop to start just any moment. Recovery 3 helo will deploy the swimmers. The helicopters continue to hover between 75 to 100 feet, as low at 50 feet, for certain inspection type passes. And Air Boss Lt. Glen Byers of Evansville, Indiana, reports the first swimmer is in the water. And now we are advised that the swimmer has attached a sea anchor, and now the helicopter is moving to deploy his two swimming colleagues And then immediately one of the swimmers will plug in a phone and have a quick conversation with the crew.

END OF TAPE

PAO This is Apollo Control Houston. We are advised that the sea anchor has been attached. The swimmers and the helicopter report they can see a light glowing through the windows from the spacecraft. The hatch, appearantly not yet open. The last measured distance we have between the YORKTOWN and the spacecraft is 2900 yards. This is Apollo Control Houston.

PAO Apollo Control Houston here at 147 hours, 49 minutes since lift-off. Now all three swimmers from helicopter III are in the water and they are clearly visible to the helicopter. They are working afix the flotation collar still an added measure of flotation insurance, around the blunt end of the spacecraft. Immediately they will inflate the May West type device, and that is our situation.

END OF TAPE

PAO Apollo Control Houston here. In the last few minutes, we've deciphered from one relay communication from Jim Lovell that he can see the swimmers working around the spacecraft. We have had confirmation that the inflation collar is fully inflated and secured. We have had some queries regarding our splash point. Our best estimate is the ~~aiming~~ point, we have no reason to - to know that is was 5,000 yards away from the Yorktown, the Yorktown is very, very close to the aiming point which was 165 degrees north, I say again 165 degrees north, correction 165 degrees west and 8 degrees 8 minutes north. The collar fully inflated. We still have no word as to when we might expect the crew open that hatch and come out and take a breath of earth air. This is Apollo Control Houston.

PAO And this is Apollo Control Houston. We have just been advised that the swimmers are standing on the inflation collar, awaiting the crew's pleasure. We still have no estimate as to when the crew will emerge, but it's our guess that that will come at just any minute right now. Now the swimmers are going through additional precautions to insure that the inflation collar is very securely fastened to the spacecraft. Our elapsed time clock shows 148 hours, with the line open for some word on that hatch opening.

PAO Apollo Control here. We have just been advised that the Recovery 3 is preparing to drop a large liferaft. The collar has been inspected and just any moment we expect to see - two liferafts have been dropped. Two liferafts and this probably signals a hatch opening just any moment.

END OF TAPE

PAO This is Apollo Control Houston. Our extraordinary communication coincidences continue. The swimmers advise that they can not talk to the crew via interphone, which is a hard line interphone connection, but they can talk with the crew by little hand radioes. Still no word as to when that hatch is going to open, but we are getting our first look at it here in this Control Center in color television which is an addition for this first flight. Both the color camera and color monitors. There has been some discussion that if that ship doesn't stop pitching and rolling we may have some seasickness here. This is Apollo Control Houston.

PAO This is Apollo Control Houston. Now we have been advised that the recovery plan will be thusly: the crew will exit the spacecraft, get into a life raft, and then the hatch will be secured before we begin any spacecraft pickup or any pilot pickup. I thought I copied - stand by just one moment. Yes, I'm sorry, no time estimate just yet as to when we can expect these events but with the light situation out there we may be able to see them. They are estimating 1500 yards now from the spacecraft. We will continue to monitor here. This is Apollo Control Houston.

PAO This is Apollo Control Houston. We have just been advised the hatch of Apollo 8, the hatch is now open. Just any moment we should have some report on exiting crew members. At 11:04 Houston time we received the report the hatch was open. And even though our - and now we're getting the first astronaut, who is not identified by any thing other than "the first astronaut", is now exiting the spacecraft. He's now getting in a life raft. And now a second astronaut is leaving the spacecraft, and if we're following military tradition, the next astronaut should be Frank Borman, although since he is Air Force he may not follow the Navy tradition of the captain of the ship leaving last. Now a second astronaut is sitting in the life raft. And now recovery advised the third astronaut, the final and of course the usual jokes about "And now the fourth astronaut", but we've succeeded in supressing the recovery room advising us of any additonal astronauts. All three astronauts are in the lift raft, the swimmers are positioned on the collar around the spacecraft. They are preparing to close seal the hatch for the pickup which will come perhaps an hour from now. And the order of the pilot's leaving the command module was exactly opposite that that I intimated. Borman left first, the second - let's check it. Lovell went second, and the junior member of the crew, Bill Anders, was the last to leave.

END OF TAPE

PAO - I believe, let's check it. Lovell second, Lovell went second and the junior member of the crew, Bill Anders, was last to leave.

PAO And now we have had a third change on it. Jim Lovell may have been the first to leave the spacecraft. That makes good sense. Since he was in the center couch, it's entirely possible that he would leave first in order to let the other out.

PAO And this is Apollo Control Houston. We have learned within the last couple of minutes that the crew has transferred to a new liferaft, for what reason we don't know, but we do know that they are in a second liferaft now and the recovery helicopter is maneuvering to begin the pickup operation. On our recovery board here we see a message from Admiral McMannes, which reads please convey to our NASA friends my congratulations on this magnificant achievement, this reflected glory, has permitted all of us to stand taller in today's world, epic, historic, amazing, fantastic, heartwarming, and the next word I can't make out, unbelievable until it happened - magnificant. It's signed Admiral McMannes and staff, who is the commander of the task force charged with this recovery effort. We are advised that the first astronaut is in the helicopter, no more identification than that. Just first astronaut in helicopter. Now the line is going down for the second astronaut. And the line is dangling and awaiting the pickup of the second man. The second astronaut in the sling and on his way.

PAO And now we have had it confirmed, the second astronaut is in the recovery helicopter. And the line is going down for the third astronaut. Earlier we had given a position of the helicopter - of the carrier only 1500 yards from the scene. That was incorrect, it should be corrected. The position at that time was 3500 yards from the scene and the carrier is making its swing now, preparatory to spacecraft pickup. Alright, the third astronaut is in the sling and is being brought up into the helicopter. And the third astronaut steps into the helo at 11:14 Houston time. The helicopter pilot confirms that the helo door has been secured, all three men are aboard and they are preparing to embark on a short flight to the Yorktown. And as we can see on our television monitors, the helicopter is now proceeding toward the Yorktown.

END OF TAPE

PAO And it is blowing at 20 knots.

PAO And this is Apollo Control here. Recovery III has permission to land first. Recovery III is bearing the pilots, we believe. We hear Recovery II being instructed to return to the helo at this time. Brisk, windy, situation out there. Navy helicopter number 66 prepares to touch down on the deck of the YORKTOWN. And touchdown at 20 minutes after the hour, 11:20 CST. For those reporters not looking at a television monitor, the engines are being shut down now and two crew members have moved out to block the wheels. And the television camera shifts to the door.

PAO Apollo Control Houston here. We had it confirmed through recovery, that apparently at the request of Frank Borman, there was electric razor aboard the helicopter, and Frank Borman used it on the way in. Very clean shaven, in contrast to the rather rather scraggle conrads with him. Apollo Control Houston here.

PAO And this is Apollo Control Houston, if you are listening to this loop you probably hear applause in the background as demonstration going on here in the Control Center, that we haven't seen ever in our history. If you are in front of a television monitor, you can see an American flag, approximately 15 feet long, and about 10 feet from top to bottom. It was rigged in the ~~Control~~ Center earlier this morning. It has been pulled - .

END OF TAPE

PAO ... in the Control Center earlier this morning. It's been pulled into place. Every console operator is displaying a flag at his desk, very similar to what we saw immediately after the rendezvous in Gemini VI. That's the only other time that we've seen such a display of flags in the Control Center. The earlier display didn't begin to touch this one. Huge flag. It completely blocks out the wall map that we've looked at so intensely for the last six and one half days. Everyone applauded, and in one of the loops we could hear the Star Spangled Banner.

We're absolutely jammed with people here. All three Flight Controllers shifts are in the room. All the program officials.

PAO Apollo Control here if you can hear me above all these voices. It is a veritable roar in here. The North American people are in, the room is awash with cigar smoke. A number of congratulatory messages are coming across this console. We've seen several, we've read several. Here's one from I think it will describe itself. The world's greatest tracking station sends its heartfelt congratulations to the Apollo 8 crew, its beautiful spacecraft and all those who have shared in this magnificent accomplishment. And it's signed, of course, from the tracking station in Madrid, Spain. Courtesy of Dan Hunter, former MSC man before he moved to Madrid. We might return the compliment to Madrid which made possible so many of those beautiful television shots. This is Apollo Control, Houston.

PAO Again this is Apollo Control. I'm not sure how well our voice is getting out. There is tremendous roar, an undercurrent and roar in the background. I have never seen a degree of this emotional outpouring in any previous mission, including Alan Shepard's. I guess one of the big differences there between that one and this one is Alan is here standing right in the middle of this one puffing on a long black cigar. I've seen rallies in locker rooms after championship games, happy politicians after elections, but never -- none of them do justice to the spirit prevading this room. For the benefit of reporters listening I have been advised that we estimate the center director's and other officials well be available in our auditorium in 30 minutes for a press conference. This is Apollo Control, Houston.

PAO This is Apollo Control here. Again I think that many of you can see this tumult. Someone suggested that we have set the American Cancer Society's antismoking campaign back several light years. I take it from one who quit smoking a year and a half a go that this is a strong cigar. I don't know how the room can hold anymore people, but they keep coming in. Someone is standing on a console next to mine. It's a photographer. I can't even

make out who is in front of the flight directors desk, but he's produced box after box of cigars. Al Shepard just threw one back here it ricocheted off the wall. That's our status.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/27/68, GET14845, 1138a, 438/1

PAO We have just had - Apollo control, here, we have just had a chat with Donald K. Slayton, the director of flight crew operations, he tells me that he plans to fly to Hawaii this afternoon. He is going out commercial, he expects the crew will land at Hickum tomorrow afternoon about 2 oclock, Hawaii time. It will be - primarily the reason for the delay is that the carrier is out of airplane range at Hickum, Deke estimates that they will be on the ground about an hour, leaving Hawaii about 3 oclock, Hawaii time and they should be back here at Ellington Air Force Base, next to this center about 2 oclock Sunday morning, and I suspect that there are three families that are happy to hear that word. This is Apollo control, Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/27/68, CST 12:00pm, 439/1

PAO This is Apollo control, we have been asked to pass along the figures that we have here in mission control center on the time of splash, that figure is 147 hours 00 minutes and 11 seconds. Almost precisely as planned, and to repeat again our landing coordinates, 165 degrees west, 8 degrees 8 minutes north, also right on target. This is Apollo control, Houston, out.

END OF TAPE